II. R&D AND OPERATIONS SUPPORT

A. **Objective:** To provide analytical support to R&D and Operations personnel and projects.

B. **Results:**

The amount of ammonia was determined in samples submitted by J. Lephardt.

Deliveries of formaldehyde, acetaldehyde, acrolein, and acetone were determined in MS smoke for six cigarette samples submitted by R. Comes.

C. **Plans:** Continue to provide support as needed.

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PROJECT NUMBER : 6502
PROJECT TITLE : Process Monitoring and Real Time Measurements
PROJECT LEADER : K. B. Koller
PERIOD COVERED : December, 1990

I. GAS PHASE SMOKE ANALYSIS

A. **Objective:** Complete installation of multicomponent gas-phase smoke analysis system for CTSD.

B. **Results:** A new system providing quantitative analysis of carbon monoxide, nitric oxide, hydrogen cyanide, and acetaldehyde in gas-phase MS smoke has been placed into routine operation in the Special Smoking Laboratory of CTSD. The analysis system consists of a new 5-port smoking machine interfaced to a Fourier Transform Infrared (FT-IR) spectrometer. The performance of the new system was evaluated and compared to that of the previously used analysis procedure. A second system has been installed, but not placed into routine operation. Personnel in CTSD have attended a training course in the operation and maintenance of FT-IR spectrometers.

C. **Plans:** Provide support to CTSD as needed.

D. **Reference:**

Joyner, B., "Gas Phase Analysis, FTIR Calibration", Memo to J. Garman, November 15, 1990.

A. **Objective:** Determine the effect of different puff volumes on MS and SS HCN deliveries.

B. **Results:** Experiments were conducted using IM13 cigarettes. Ten different puff volumes were used ranging from 4 mL to 70 mL. Two second duration puffs were taken once per minute. Both MS and SS HCN deliveries were affected by puff volume. MS HCN levels increased with puff volume whereas SS HCN levels where highest at the middle of the range of puff volumes used.

C. **Conclusions:** The dependence of HCN levels in gas-phase smoke on puff volume is attributed to variation in cigarette coal temperature.

D. **Reference:**

Parrish, M., PM Notebook 9034, pp. 21-22.

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